EXHIBIT

No. 1

DEFENDANTS' REPLY TO THE STATE OF OKLAHOMA'S RESPONSE TO MOTION TO EXCLUDE THE TESTIMONY OF DR. CHRISTOPHER TEAF
(DOCKET NO. 2156)

05-CV-0329 GKF-PJC

IN THE UNITED STATES DISTRICT COURT FOR THE

NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA and OKLAHOMA SECRETARY OF THE ENVIRONMENT C. MILES TOLBERT, in his capacity as the TRUSTEE FOR NATURAL RESOURCES FOR THE STATE OF OKLAHOMA,	)
Plaintiff,	)
vs.	) 4:05-CV-00329-TCK-SAJ
TYSON FOODS, INC., et al,	)
Defendants.	)

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THE VIDEOTAPED DEPOSITION OF

CHRISTOPHER TEAF, PhD, produced as a witness on behalf of the Defendants in the above styled and numbered cause, taken on the 31st day of January, 2008, in the City of Tulsa, County of Tulsa, State of Oklahoma, before me, Lisa A. Steinmeyer, a Certified Shorthand Reporter, duly certified under and by virtue of the laws of the State of Oklahoma.

A I would say it was a combination of questions and comments. Some of them weren't stated as questions. I have this information and it was valuable to me.

Q Why? 04:49PM

A Well, for example, when the -- when we discussed the relative source contribution issue, someone mentioned to me that one of the large swine raising operations that previously had been operating in Oklahoma that showed up on our census 04:49PM information was no longer, and that was valuable.

Q Uh-huh.

A I use that kind of information whenever I can get it.

Q Earlier in response to some questioning by Mr. 04:50PM Tucker, you talked about a source allocation type analysis that you did pursuant to TMDL guidance; is that fair?

A Parts of the TMDL approach, which often go way beyond what we did and look at other flow rates and 04:50PM back calculate acceptable loadings, which we did not do.

Q When did you perform that analysis?

A It's been ongoing for a long time. Probably at least -- parts of it have been ongoing probably 04:50PM

for at least a year, but for the most part it's been the last six or eight months I would say.

Q Why did you perform that analysis?

A To understand better the answer to some of the questions that have come up today, which is how important are septic tanks, how important are MPDS points of discharge in the Illinois River watershed, what loading do you see from all kinds of poultry, from cattle, from swine, pets, wildlife, that type of thing, again, standard to the approach that's taken by DEQ in Pennsylvania and Ohio in their TMDL. 04:50PM 04:51PM

Q Is there a TMDL guidance that you're approached on?

A There are several. There's an EPA guidance and there's actually a DEQ guidance I believe. 04:51PM

Q On how to prepare a TMDL?

A Yes.

Q Is it specific to bacteria or is it just a general approach for TMDL's?

A I would say there's some of both, that is, there's a certain element of TMDL work that is rote, and it doesn't matter what the contaminant is, and there's a certain amount that's related specifically to pathogens as opposed to industrial discharges and that type of thing. 04:51PM 04:51PM

Q Okay, and remind me, what sources did you allocate -- let me back up. Was your allocation strictly bacteria or did you allocate other constituents in water based upon source in that work? 04:52PM

A We did not do anything other than bacteria, fecal coliform bacteria.

Q Okay, and remind me, what sources did you look at as part of your allocation?

A Let me think for a second. I mentioned 04:52PM wildlife, which are -- according to that process, the surrogate for that is deer populations. We did septic -- failing septic systems as they're outlined. Did MPDS discharges. We did pets; we did cattle; we did swine, and we did poultry as a 04:52PM function of broilers, layers, pullets and turkeys, I believe are the four.

Q So certainly implicit in your work in this regard is an acknowledgment that there are multiple sources of bacteria in the waters of the Illinois 04:53PM River watershed; is that correct?

A Yes, sir, and the question of importance is the one that we were seeking to try to address.

Q Let's take an example of one, and I want to understand kind of how you came up with your 04:53PM

analysis and how you came up with an allocation, and I don't know that I really care which one, but let's take -- did you do or analyze dairies?

A We did cattle total, which includes dairy cattle. 04:53PM

Q So cattle includes dairies?

A That's an interesting aspect of it because we -- there are values associated with fecal releases, fecal coliform releases per animal per day, and that information may be available for multiple types of 04:53PM one species. So dairy cattle have a particular release rate. Beef cattle have a particular release rate. Calves have a particular release rate. In our analysis, rather than try to fragment that because it's difficult to get separate population 04:54PM estimates for dairy cattle and beef cattle and calves on any reasonable regular basis, we use the value for cattle, which is the higher of the three. So our -- we allocated the highest potential source to cattle that we could generate. I don't know if 04:54PM I'm being clear about that.

Q So you basically used dairy cattle then for --

A No. Actually used beef cattle. The dairy cattle contribution is slightly less.

Q Okay. So in terms of beef cattle, what you're 04:54PM

analyzing is loading, actual loading to the water of bacteria; correct?

A Loading to the Illinois River watershed.

Q Okay.

A And we apportioned everything to -- because you get county data and then you have to apportion that within land use category in the Illinois River watershed. 04:54PM

Q So how did you get a number -- tell me how you went from the number you got for cattle and what assumptions you made in terms of its contribution in terms of fate and transport, how much bacteria gets on the ground, those kinds of things; how did that work? 04:55PM

A Well, we stopped at the point of calculating estimated loading to the watershed, that is, identifying the loading for all poultry, identifying the loading for cattle, septic tanks, pets, that type of thing. However, we didn't -- other than qualitatively understanding that the characteristics of the application of those fecal materials are different, we didn't go to the point of modeling, for example, from a cow patty to the river. 04:55PM

Q Okay. That's helpful for me to understand. So what you basically -- your analysis, and please 04:55PM

correct me if I'm wrong, assumed that once the bacteria source hit the ground, that was a contribution to the waters; is that correct?

MR. PAGE: Object to the form.

A I don't know about the hit the ground part. What we did is look at the number of animals, the amount of fecal material and fecal coliform bacteria per animal, and got a loading for the Illinois River watershed both in Arkansas and Oklahoma total together. 04:56PM

Q So there was -- if you assume a beef cow from some literature produces X amount of excrement per day, how did you use that figure; is that --

A Well, it's actually not a number we needed based on the approach that is taken in the TMDL report. They generate -- the TMDL report generates a value from the American Society of Agricultural Engineers with regard to fecal coliforms per day per animal. You can get it for cattle, you can get it for chickens and you can get it for horses and ponies and all that. 04:56PM

Q So once you got that for one cow, you took that straight into your calculation?

A Correct.

Q So that calculation didn't put that fecal 04:57PM

coliform in the water; is that fair?
A No, it did not.
Q Okay. So then before wastewater treatment plants, did you just assume the same thing or did you assume it got into the water, it being fecal coliform? 04:57PM
A We didn't make that distinction.
Q So you were just basically saying total generation of fecal coliform in the Illinois River watershed and you allocated it that way? 04:57PM
A Yes.
Q So there was no fate and transport element to your work?
A No.
Q Did you produce that work to the defendants in this case? 04:57PM
A Yes.
Q You did?
A I did.
Q What did that work look like; what was the summary of that work or -- 04:57PM
A There are seven tables, seven files. I couldn't tell you the Bates numbers of them, but there are several tables that are -- that you need to use in conjunction with one another because one 04:57PM

it's the total generation of fecal coliform; that's what your analysis did; correct?

A Yes, and I don't distinguish -- I'm not sure how you used the word loading.

Q I'm talking about loading in terms of from the end of the chicken or end of the cow or the end of the water treatment plant to where it is in the water. 04:59PM

A I don't use the word loading that way. I called it a loading analysis, but I did not do fate and transport from the point of deposition to the water body. 04:59PM

Q Okay. So we are using loading in a different way?

A Yes, sir. 04:59PM

Q You're not using loading to mean that your analysis about the contribution of chickens is that the amount gets into the waters of the Illinois River watershed; is that correct?

A My conclusion has been that some of it does, and I've described qualitatively why I think that's important. 04:59PM

Q But not as part of your TMDL analysis?

A No, sir.

Q Or TMDL-like analysis? 04:59PM

A No.

VIDEOGRAPHER: We're now off the Record. The time is 4:59 p.m.

(Following a short recess at 5:00 p.m., proceedings continued on the Record at 5:09 p.m.) 05:09PM

VIDEOGRAPHER: We are back on the Record. The time is 5:09 p.m.

Q Let me ask you one more follow-up question on this TMDL-like work that you did and, that is, if you had to pick one document that guided your 05:10PM methodology, what would that one document be?

A Can I have two?

Q Sure.

A I would say the EPA TMDL guidance and either of the several DEQ TMDL's that are out there. I've 05:10PM looked at ones from other states and they're actually quite similar.

Q One more follow-up question on Christie Bradley. Did anyone ask you to call Ms. Bradley?

A No. 05:11PM

Q Okay. Do you know whether or not the State of Oklahoma intends to call Ms. Bradley at the upcoming hearing on the motion for preliminary injunction, call her as a witness?

A I have no idea. 05:11PM